Amendments to the Claims

1. (Cancelled)

2. (Amended) A fuel cell power plant ~~according to claim 1~~, comprising:

a fuel cell comprising an anode support plate including a porous substrate layer, a cathode support plate including a porous substrate layer, and a membrane electrode assembly disposed between said support plates, said membrane electrode assembly comprising a polymer electrolyte membrane disposed between two catalysts, wherein: said cathode support plate comprises a ~~porous,~~ hydrophilic substrate layer, and a partially hydrophobic diffusion layer disposed between said substrate layer and said membrane electrode assembly; , and said anode support plate includes a porous, hydrophilic substrate layer, but does not include a diffusion layer;

a first porous water transport plate adjacent to said cathode support plate, said first porous water transport plate having a passageway for a coolant stream to pass through;

a second porous water transport plate adjacent to said anode support plate, said second porous water transport plate having a passageway for a coolant stream to pass through, wherein said water transport plates are hydrophilic;

either said cathode support plate or said first porous water transport plate having a passageway for an oxidant reactant gas stream to enter therein and exit therefrom, and either said anode support plate or said second water transport plate having a passageway for a fuel reactant gas stream to enter therein and exit therefrom, at least one of said reactant gas stream passageways being interdigitated;

means for creating a predetermined pressure differential between said oxidant gas stream and said coolant stream such that the pressure of said oxidant gas stream is greater than th pressure of said coolant stream;

means for creating a predetermined pressure differential between said fuel reactant gas stream and said coolant stream such that the pressure of said fuel reactant gas stream is greater than the pressure of said coolant stream; and

the pressure of said oxidant gas stream is between about 1.0 psig and about 1.5 psig above the pressure of said coolant stream.

3. (Original) A fuel cell power plant, comprising:

(a) a fuel cell comprising an anode support plate and a cathode support plate and a membrane electrode assembly disposed between said anode and cathode support plates, said membrane electrode assembly comprising a polymer electrolyte membrane disposed between two catalysts, one of said support plates comprising a substrate layer having pores therein and having an interdigitated passageway for a reactant gas stream to enter therein and exit therefrom;

(b) a porous water transport plate adjacent to said one support plate, said porous water transport plate having a passageway for a coolant stream to pass therethrough; and

(c) means for creating a predetermined pressure differential between said reactant gas stream and said coolant stream such that the pressure of said reactant gas stream is greater than the pressure of said coolant stream.

4. (Original) The fuel cell power plant of claim 3 wherein both said support plates comprise a porous substrate layer having an interdigitated passageway for a reactant gas stream to enter therein and exit therefrom and wherein said fuel cell power plant further comprises:

(d) a porous water transport plate adjacent to each of said support plates, said porous water transport plates each having a passageway for a coolant stream to pass therethrough; and

(e) means for creating a predetermined pressure diff rential between each said reactant gas stream and said coolant stream such that the pressure of each said reactant gas stream is greater than the pressure of said coolant stream.

5-12. (Cancelled)

13. (Amended) ~~The~~ A fuel cell power plant ~~of claim 5 wherein~~ , comprising:

(a) a fuel cell comprising an anode support plate and a cathode support plate and a membrane electrode assembly disposed between said anode and cathode support plates, said membrane electrode assembly comprising a polymer electrolyte membrane disposed between two catalysts, said support plates each comprising a substrate layer having pores therein one of said porous substrate layers within one of said support plates ~~is~~ being hydrophobic;

(b) a porous water transport plate adjacent to one of said support plates, said porous water transport plate having a passageway for a coolant stream to pass therethrough and an interdigitated passageway for a reactant gas stream to enter therein and exit therefrom; and

(c) means for creating a predetermined pressure differential between said reactant gas stream and said coolant stream such that the pressure of said reactant gas stream is greater than the pressure of said coolant stream.

14. (Cancelled)

15. (Amended) ~~The~~ A fuel cell power plant ~~of claim 14 wherein said diffusion layer has~~ , comprising:

(a) a fuel cell comprising an anode support plate and a cathode support plate and a membrane electrode assembly disposed between said anode and cathode support plates, said membrane electrode assembly comprising a polymer

electrolyte membrane disposed between two catalysts, said support plates each comprising a substrate layer having pores therein and a diffusion layer disposed between said substrate layer and said membrane electrode assembly having critical surface energy equal to or less than about 30 dyne per centimeter;

(b) a porous water transport plate adjacent to one of said support plates, said porous water transport plate having a passageway for a coolant stream to pass therethrough and an interdigitated passageway for a reactant gas stream to enter therein and exit therefrom; and

(c) means for creating a predetermined pressure differential between said reactant gas stream and said coolant stream such that the pressure of said reactant gas stream is greater than the pressure of said coolant stream.

16. (Amended) ~~The~~ A fuel cell power plant, ~~of claim 5 wherein~~ comprising:

(a) a fuel cell comprising an anode support plate and a cathode support plate and a membrane electrode assembly disposed between said anode and cathode support plates, said membrane electrode assembly comprising a polymer electrolyte membrane disposed between two catalysts, said support plates each comprising a substrate layer having pores therein, one of said support plates including a diffusion layer and one of said support plates ~~does~~ not ~~include~~ including a diffusion layer;

(b) a porous water transport plate adjacent to one of said support plates, said porous water transport plate having a passageway for a coolant stream to pass therethrough and an interdigitated passageway for a reactant gas stream to enter therein and exit therefrom; and

(c) means for creating a predetermined pressure differential between said reactant gas stream and said coolant stream such that the pressure of said reactant gas stream is greater than the pressure of said coolant stream.

17. (Cancelled)

18. (Cancelled)

19. (Currently Amended) A method of operating a fuel cell power plant comprising:

(a) a fuel cell comprising an anode support plate and a cathode support plate and a membrane electrode assembly disposed between said anode and cathode support plates, said membrane electrode assembly comprising a polymer electrolyte membrane disposed between two catalysts, said support plates each comprising a substrate layer having pores therein;

(b) a porous cathode water transport plate adjacent to said cathode support plate, either said cathode support plate or said porous cathode water transport plate having a passageway for an oxidant reactant gas stream to enter therein and exit therefrom, and a porous anode water transport plate adjacent to said anode support plate, said anode support plate or said porous anode water transport plate having a passageway for a fuel reactant gas stream to enter therein and exit therefrom, each said porous water transport plate having a passageway for a coolant stream to pass through, at least one of said reactant gas stream passageways being interdigitated; and

(c) means for creating a predetermined pressure differential between said reactant gas streams and said coolant streams such that the pressure of said reactant gas streams is greater than the pressure of said coolant streams;

said method comprising:

flowing hydrogen-containing gas through said fuel reactant gas passageway;

flowing air through said oxidant reactant gas passageway;

controlling the flow rate of air to maintain an oxidant stochiometry of ~~250~~167% or less;

operating said fuel cell at a maximum current density of at least 1.6 amps per square centimeter in response to corresponding electrical loads across said fuel cell which require at least 1.6 amps per square centimeter; and

alternatively operating said fuel cell at current densities of less than 1.6 amps per square centimeter in response to related electrical loads across said fuel cell which require less than 1.6 amps per square centimeter.

20. (Cancelled)

21. (Amended) A method of claim ~~20~~ 19 wherein said controlling and operating steps comprise:

operating said fuel cell at a maximum current density of at least 1.5 amps per square centimeter while controlling said flow rate to maintain a stochiometry of about 167% or less.